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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/091,182	03/05/2002	Max Donath	U11.12-0145	9959

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EXAMINER	
GIBSON, ERIC M	

ART UNIT	PAPER NUMBER
3661	

DATE MAILED: 05/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/091,182	DONATH ET AL.	
	Examiner	Art Unit	
	Eric M Gibson	3661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 February 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-44* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-43* is/are rejected.

7)☒ Claim(s) *44* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1/7/04, 12/15/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The IDS filed 1/07/2004 contains an Office Communication for a co-pending application. This document will be used to consider the relevance of the documents contained therein, but it does not constitute a prior art document in and of itself. Therefore, it has been crossed off the IDS (see attached).

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 1-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al. (US006184823B1) in view of Rogers et al. (US006144335A).

a. As per claim 1, Smith teaches a geographic database architecture that includes a geospatial database (40, figure 1) storing data elements indicative of objects and their location in 3-D space (column 7, lines 34-39), a database manager configured to maintain the data elements and receive database queries from the user (12, figure 1), and a query processor (navigation application 18, figure 1) that receives queries from the database manager, queries the database and returns the results to the database manager (column 26, lines 12-16, see also figure 20). Smith does not specify the accuracy of the location coordinates being approximately one decimeter or less (< 0.1 m). Rogers teaches the state of the art of GPS accuracy, including that depending on the desired accuracy for the particular application, accuracy at the decimeter-level is

achieved through well-known methods in the art (column 1, lines 49-63). Navigation systems depend on the accuracy of their locations in order to function properly and effectively. It would have been obvious to one of ordinary skill in the art, at the time of invention, to have an accuracy in location coordinates to approximately one decimeter or less in the invention of Smith, as achieved through well-known methods in the art shown by Rogers.

b. As per claims 2-5, Smith teaches that the query results are returned when there are any matches, the actual speed of the processing will be dependent on the design choice of the processor and its processing capabilities, as is well-known to one of ordinary skill in the art, at the time of the invention.

c. As per claims 6-8, Rogers teaches location accuracy on the decimeter and centimeter levels (column 1, lined 49-63).

d. As per claim 9, Smith teaches including a query polygon indicative of a geospatial region of interest and returning all results that intersect with the polygon (column 11, lines 43-45).

e. As per claims 10-13, Smith teaches parcelization of the database information such that it can be organized according to spatial location (column 13, lines 10-19) and according to attribute type (column 14, lines 33-54).

f. As per claim 14, Smith teaches that the database contains both spatial data portion and an attribute portion (column 8, lines 1-19).

g. As per claims 15-22, Smith teaches a variety of different attributes that may be included in the database (column 8, lines 1-25), that are not limited to only those explicitly defined, but also to other attributes common in a geospatial database.

h. As per claim 23, Smith teaches a geographic database architecture that includes a geospatial database (40, figure 1) storing data elements indicative of objects and their location in 3-D space (column 7, lines 34-39) and a database accessing system that accesses the database in response to a query and returns the results in substantially real time (column 26, lines 12-16, see also figure 20). Smith does not specify the accuracy of the location coordinates being sufficient to distinguish among different lanes of travel. Rogers teaches the state of the art of GPS accuracy, including that depending on the desired accuracy for the particular application, accuracy at the decimeter and centimeter levels (sufficient to distinguish between lanes of travel) is achieved through well-known methods in the art (column 1, lines 49-63). Navigation systems depend on the accuracy of their locations in order to function properly and effectively. It would have been obvious to one of ordinary skill in the art, at the time of invention, to have an accuracy in location coordinates sufficient to distinguish between the lanes of travel in the invention of Smith, as achieved through well-known methods in the art shown by Rogers.

i. As per claims 24-26, Smith teaches that the query results are returned when there are any matches, the actual speed of the processing will be dependent on the design choice of the processor and its processing capabilities, as is well-known to one of ordinary skill in the art, at the time of the invention.

j. As per claim 27, Smith teaches a geographic database architecture that includes a geospatial database (40, figure 1) storing data elements indicative of objects and their location in 3-D space (column 7, lines 34-39) and a database accessing system that accesses the database in response to a query and returns the results in substantially real time (column 26, lines 12-16, see also figure 20). Smith does not specify the accuracy of the location coordinates being approximately one decimeter or less (< 0.1 m). Rogers teaches the state of the art of GPS accuracy, including that depending on the desired accuracy for the particular application, accuracy at the decimeter-level is achieved through well-known methods in the art (column 1, lines 49-63). Navigation systems depend on the accuracy of their locations in order to function properly and effectively. It would have been obvious to one of ordinary skill in the art, at the time of invention, to have an accuracy in location coordinates to approximately one decimeter or less in the invention of Smith, as achieved through well-known methods in the art shown by Rogers.

k. As per claims 28-30, Rogers teaches location accuracy on the decimeter and centimeter levels (column 1, lined 49-63), which is sufficient to distinguish between lanes of travel.

3. Claims 31-33 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Smith and Rogers in view of Schofield et al. (US005949331A).

a. As per claims 31 and 32, the combination teaches the invention as explained in the rejection of claim 1. The combination does not teach a head-up display that generates and image of the lanes of the travel path. Schofield teaches display

enhancements for a vehicle vision system that includes a head-up display (column 6, line 45) and superimposes an image of the boundaries of the travel path (column 10, lines 59-63). It would have been obvious to one of ordinary skill in the art, at the time of invention, to include a head-up display that generates and image of the lanes of the travel path in the system of the combination, as taught by Schofield, in order to increase the driver's awareness of the objects around the vehicle.

b. As per claims 33 and 40, Schofield teaches a radar system that detects and displays the objects around the vehicle (cameras 14 and 16, figure 1).

4. Claims 34, 36, 37, 41 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Smith and Rogers in view of Wilson-Jones et al. (US005765116A).

a. As per claim 34, the combination teaches the invention as explained in the rejection of claim 1. The combination does not teach generating haptic feedback to the driver. Wilson-Jones teaches a driver assistance system that helps to keep a driver from going outside the lane markings on the road, including generating haptic feedback to the driver (column 6, lines 1-5). It would have been obvious to one of ordinary skill in the art, at the time of invention, to include haptic feedback in the system of the combination, as taught by Wilson-Jones, in order to warn a driver that the vehicle is crossing lane boundaries.

b. As per claims 36, 37, 41, and 42, Wilson-Jones teaches that the haptic feedback is in the form of a vibration transmitted through the steering wheel to the driver to simulate a rumble strip (column 6, lines 1-5).

5. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Smith, Rogers and Wilson-Jones as applied above to claim 34, and further in view of Breed et al. (US006370475B1).

a. As per claim 35, the combination teaches the invention as explained in the rejection of claim 34, however, the combination does not teach that the lane markings are stored in a database memory. Breed teaches an accident avoidance system that compares the vehicle location to locations stored in a memory and issues a warning to the driver (column 53, lines 5-18), in order to prevent an accident. It would have been obvious to one of ordinary skill in the art, at the time of invention, to compare the vehicle location to lane marking locations stored in a memory and issue a warning to the driver in the invention of the combination, as taught by Breed, as an alternative method of determining the locations of the lane markings.

6. Claims 38 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Smith and Rogers in view of Breed et al. (US006370475B1).

a. As per claims 38 and 39, the combination teaches the invention as explained in the rejection of claim 1. The combination does not teach generating a warning based on the location of the vehicle relative to locations of objects stored in the database. Breed teaches an accident avoidance system that compares the vehicle location to locations stored in a memory and issues a warning to the driver (column 53, lines 5-18), in order to prevent an accident. It would have been obvious to one of ordinary skill in the art, at the time of invention, to compare the vehicle location to

locations stored in a memory and issue a warning to the driver in the invention of the combination, as taught by Breed, in order to prevent an accident.

7. Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Smith and Rogers in view of Dobler et al. (US006038496A).

a. As per claim 43, the combination teaches the invention as explained in the rejection of claim 1. The combination does not teach a radar subsystem to detect objects in the vicinity of the vehicle. Dobler teaches a radar system to be used in a vehicle to detect objects in the vehicle's vicinity and issue a warning to the driver (column 1, lines 5-16). It would have been obvious to one of ordinary skill in the art, at the time of invention, to include a radar system to detect objects in the vehicle's vicinity in the system of the combination, as taught by Dobler, in order to issue a warning to the driver to prevent an accident.

Allowable Subject Matter

8. Claim 44 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

a. As per claim 44, the prior art does not teach or reasonably suggest in combination the present invention including a radar filtering subsystem that blocks the passage of the location of selected objects, detected by the radar subsystem, to the driver assist subsystem as claimed.

Response to Arguments

9. Applicant's arguments on page 22, filed 2/9/2004, with respect to claim 44 have been fully considered and are persuasive. The rejection of claim 44 has been withdrawn.

10. Applicant's arguments filed 2/9/2004, with respect to claims 1-43 have been fully considered but they are not persuasive.

a. On page 16 of the reply, the applicant states that no motivation exists for combining the teaching of Rogers and Smith as applied by the Examiner in the rejection of claims. However, the Examiner has provided the obvious motivation that in the field of navigation systems, the systems depend on the accuracy of their locations in order to function properly and effectively. The accuracy of roadway mapping is a problem that is recognized in the prior art, see Lanckton et al. (US005517419A) column 1, lines 36-40 and Gunji et al. (US005926117A) column 2, lines 12-17. Therefore it would have been obvious to one of ordinary skill in the art to make a geographical database as accurate as possible, including decimeter level accuracy, which is well known in the art, as evidenced by the teaching in Rogers.

b. On page 17 of the reply, the applicant states that the references fail to teach "lane-level" resolution. However, as noted in the rejections, Smith teaches that road segment data is recorded in the database including information on direction of travel on road portions in column 8, lines 1-19. This information is at a lane-level resolution. It identifies the lane of travel, indicating traffic direction.

c. On pages 17 and 18 of the reply, the applicant states that the rejection fails to teach a "driver assist subsystem" because the user is not a subsystem. However, the user necessarily must input the queries into an interface, shown in figure 1, which is considered "driver assist subsystem" under the broadest reasonable interpretation of that limitation in the claim language.

d. On page 18 of the reply, the applicant disagrees with the rejection of claims 15-22 because the particular attributes the Examiner cites as being well known in the art are not explicitly named. Evidence of these attributes being common to the art is found in Breed et al. (US006526352B1), wherein the map includes location of the edge of the road, edge of the shoulder, signs, lane markers, light poles, guard rails, etc. (column 83, lines 1-5) and also in Cherveny et al. (US006047234A) wherein it is taught in column 13 to include the position of landmarks such as light posts and traffic signs in a geographical database to help with vehicle location determination. Furthermore, the disputed claims are merely a recitation of a list of named elements that are given particular labels such as "RoadIsland" or "LaneCenter". While the particular labels may not be present in the prior art, the teaching of including those attributes *represented* by the labels is well known in the art.

e. On page 19 of the reply, the applicant asserts that Schofield fails to teach the limitation of claim 32. However, as the rejection points out, Schofield does teach overlaying the actual lane boundaries of the travel path within the broadest reasonable interpretation of that limitation.

f. On page 20, the applicant disputes the motivation of combining the teaching of Schofield to the invention taught by the combination of Smith and Rogers. Navigation systems are becoming near ubiquitous in vehicles sold to consumers, such that the presence of a navigation system as taught by Smith combined with the vision system of Schofield would be obvious to one of ordinary skill in the art at the time of the invention. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

g. On page 20, the applicant disagrees with the Examiner that Schofield teaches detecting objects. The Examiner directs the applicant to column 11 in Schofield, wherein detecting object distance from the vehicle is taught. Detecting an object distance necessitates detecting the object itself.

h. On pages 20-21, the applicant asserts that Schofield fails to teach a radar filtering subsystem that blocks the passage of the location of selected objects to the head-up display. Schofield teaches using median filtering techniques (column 9, line 4) in order to remove a portion of the image, including removing objects above the horizon from the display (column 9, lines 24-32).

i. On page 22, the applicant asserts that in the rejection of claim 43, the teaching of Dobler fails to "pass a location of the object to the driver assist subsystem". However, Dobler teaches detecting objects and giving warnings when they are detected too close. This necessitates passing a location of an object to the driver assist subsystem in order to actuate the warning.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric M Gibson whose telephone number is (703) 306-4545. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Black can be reached on (703) 305-8233. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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